ROSEN - ILI DATA FUSION
ABOUT OUR DATA FUSION APPROACH

Data Fusion integrates information from MFL-A and MFL-C tools using a neural network to comprehensively characterize all types of corrosion features. By utilizing both axial and circumferential magnetic field directions, Data Fusion harnesses complementary information from both to produce a detailed and accurate profile of pipeline corrosion. This approach ensures that all feature classes are properly identified and assessed, addressing the complexities inherent in pipeline integrity management.

Why is MFL-A and MFL-C Data Fusion so innovative?

Traditionally, integrating findings from MFL tools A and C has been a manual task, necessitating highly skilled analysts proficient in both MFL-A and MFL-C technologies. These experts need to grasp both the strengths and limitations of each technology to extract the most relevant information from inspection data to accurately characterize features. Such analyses only result in basic box-shaped representation of corrosion defect dimensions length, width and depth.

In contrast, our proposed Data Fusion method involves combining the magnet response signals from MFL-A and MFL-C into a convolutional neural network (CNN), generating a comprehensive 3D depth profile.

This approach eliminates the need for the interpretation and manual merging of individual MFL signals, providing a complete 3D morphology description of the corrosion feature.

MFL technologies are the backbone of the pipeline inspection industry for comprehensive corrosion defect assessment. ROSEN has always been a market leader in providing tools in both magnetizing directions – axial (MFL-A) and circumferential (MFL-C). Conventional data evaluation provides for a separate evaluation of MFL data and generates two inspection reports. However, with the development of data fusion machine learning models, we can now take advantage of the complementary information of two MFL inspections and generate high-resolution 3D metal loss depth maps. The high-quality 3D depth maps dramatically increase the accuracy of safe remaining life and pressure assessments, ultimately reducing mitigation cost for our clients.

Looking ahead, Data Fusion marks the initial stage in expanding ILI industry applications aimed at fusing data. Future developments will serve to integrate various technologies targeting different pipe threats, such as cracks, corrosion, deformations and combinations thereof. This process involves enhancing anomaly signal recording and advancing neural networks and AI capabilities. The expertise and resources gathered now are laying a solid foundation for the ongoing evolution and broader adoption of data fusion technologies in ILI applications.

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